Center Independent Research & Development: GSFC IRAD

Using Ion Implantation to Fine-tune the Figure of Extremely Lightweight Mirrors

Completed Technology Project (2013 - 2015)

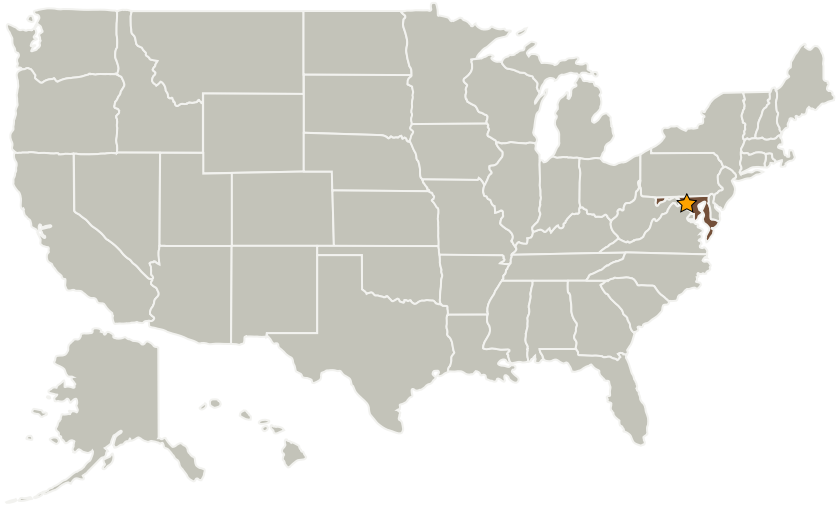
Project Introduction

Ion implantation can change the mechanical and electrical properties of a material. It is a mature technology that has found many applications, both in industry and in research. We are investigating a new and innovative application of this technology: fine-tuning the optical figure of thin (< 0.5mm) and lightweight (areal density < 1 kg/m2) x-ray mirrors. When successfully developed, this process would be able to significantly improve the fabrication process and the point-spread-function of future x-ray telescopes. This technique could be used as a step of fabricating x-ray optics for future astronomical missions.

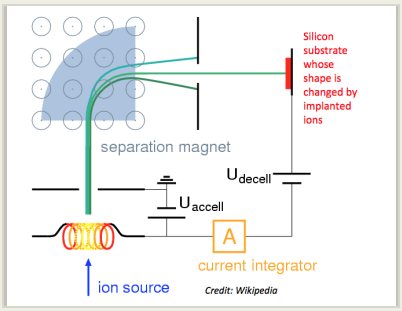
Anticipated Benefits

N/A

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland



Using Ion Implantation to Fine-tune the Figure of Extremely Lightweight Mirrors Element

Table of Contents

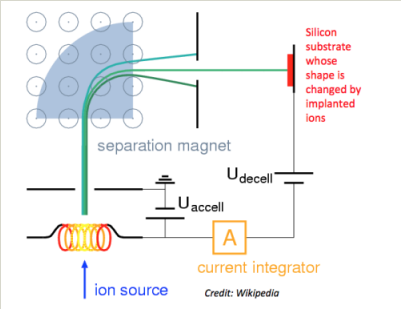
Using Ion Implantation to Fine-tune the Figure of Extremely Lightweight Mirrors

Completed Technology Project (2013 - 2015)

Primary U.S. Work Locations

Maryland

Images



Using Ion Implantation to Fine-tune the Figure of Extremely Lightweight Mirrors Element
Using Ion Implantation to Fine-tune the Figure of Extremely Lightweight Mirrors Element
(https://techport.nasa.gov/image/3997)

Stories

Using Ion Implantation to Fine-Tune the Figure of Extremely Lightweight Mirrors
(https://techport.nasa.gov/file/1316)

Links

NTR 1438191592
(no url provided)

Project Website:

http://aetd.gsfc.nasa.gov/

Organizational Responsibility

Responsible Mission Directorate:
Mission Support Directorate (MSD)

Lead Center / Facility:
Goddard Space Flight Center (GSFC)

Responsible Program:
Center Independent Research & Development: GSFC IRAD

Project Management

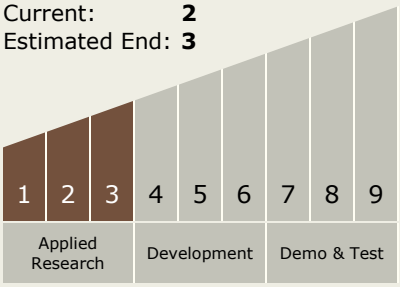
Program Manager:
Peter M Hughes

Project Manager:
Stanley D Hunter

Principal Investigator:
William W Zhang

Technology Maturity (TRL)

Start: **1**
Current: **2**
Estimated End: **3**



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Completed Technology Project (2013 - 2015)

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.3 Electronics and Optics Manufacturing Process